UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,784	10/21/2003	Maxime Rattier	046190/269883	7572

826 7590 04/06/2005

ALSTON & BIRD LLP
BANK OF AMERICA PLAZA
101 SOUTH TRYON STREET, SUITE 4000
CHARLOTTE, NC 28280-4000

EXAMINER	
TRAN, TAN N	

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/689,784	RATTIER ET AL.	
	Examiner	Art Unit	
	TAN N. TRAN	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *amendment filed on01/10/05 and 01/24/05*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,3,12-17 and 19-25* is/are rejected.

7)☒ Claim(s) *4-11,18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Minhloan Tran
Primary Examiner
Art Unit 2826

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.
(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the upper and lower mirrors defined an asymmetric resonant cavity of the Fabry-Perot type as recited in claim 19 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 15 is objected to because of the following informalities:

In claim 15, line 1, "claim 1" should be changed to – claim 22

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter

as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2,3,12-17,19-25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Joannopoulos et al. (5,955,749).

With regard to claims 12,13,15-17,21-25, Joannopoulos et al. discloses a light emitting diode comprising a lower mirror 622 carried by the substrate 602; a quantum well layer 606 serves as a conversion layer of electron-hole pairs into photons; and n-type and p-type layers (604,608) serve as electron and holes generating layers; the holes 610 (510) serve as light extraction wherein the holes 610 (510) communicating with a part at least of the quantum well layer 606 and the layers (604,608) and arranged in the periphery of the quantum well layer 606 and the layers (604,608) to extract out of these at least a part of photons in the guided mode. (Note figs. 5,6 of Joannopoulos et al.). It is inherent that Joannopoulos et al. discloses a upper mirror opposites to lower mirror because the structure of applicant having the upper mirror is constituted by an interface between an outer surface of p-type semiconductor 8 and air while the structure of Joannopoulos et al. also having an interface between outer surface of p-type semiconductor and air, so the interface between outer surface of p-type semiconductor and air of Joannopoulos et al. functions as the upper mirror and the same as that of the claimed invention. Note fig. 1A of Qstergaard et al. (6,683,898) is cited to support for the inherent position.

Joannopoulos et al. disclose all the claimed subject matter except for the lower and upper mirrors are arranged so as to ensure containment of photons presenting at least a selected wavelength associated to a guided propagation mode. However, in reference to the claim language referring to the function of the lower and upper mirrors, intended use and other types of functional language must result in a structural difference between the claimed invention and the

prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey,152 USPQ 235 (CCPA 1967);. In re Otto, 136 USPQ 458, 459 (CCPA 1963).

With regard to claims 2,3, Joannopoulos et al. discloses all the claimed subject matter except for the extracting means are in the form of a diffracting tridimensional structuration defines a photonic quasi-crystal of holes or columns constituting diffracting elements with dimensions selected based on at least the wavelength of the photons in the guided mode. However, it would have been obvious to one of ordinary skill in the art to recognize that the holes 610 (510) of Joannopoulos et al. serve as light extraction wherein the holes 610 (510) are in the form of a diffracting tridimensional structure with dimensions selected based on at least the wavelength of the photons in the guided mode in order to increase high efficiency output of light emitting device.

With regard to claim 14, Joannopoulos et al. discloses the lower mirror 622 is a reflective mirror of the Bragg's mirror type placed on a substrate 602. Note fig. 6 of Joannopoulos et al.

With regard to claims 19,20, Joannopoulos et al. discloses all claimed invention as in claim 1, except the lower and upper mirrors define an asymmetric magnetogenic cavity of Fabry-Perot type or antimagnetogenic cavity with wavelength of the photons emitted by the converting means. However, it would have been obvious to one of ordinary skill in the art to recognize that the lower and upper mirrors of Joannopoulos et al. define as an asymmetric magnetogenic cavity of Fabry-Perot type or antimagnetogenic cavity with wavelength of the photons emitted by the

converting means because Joannopoulos et al.'s structure is identical to the claimed invention Joannopoulos et al.'s device funtions the same as that of applicant's device in order to make interferometer device.

Allowable Subject Matter

5. Claims 4-11,18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 4-11,18 are allowable over the prior art of record, because none of these references disclose or can be combined to yield the claimed invention such as the size of the edges being substantially equal to a selected average value with a percentage close to within approximately +15% and –15% as recited in claim 4, and two AlGaAs barriers framing a quantic well in InGaAs and forming the converting means, a first means of electric contact to enable the p doped GaAs layer to place under a positive polarization and a second means of electric contact suitable to place the n doped GaAs layer to be placed under a negative polarization as recited in claim 18.

Response to Arguments

6. Applicant's arguments filed 01/10/05 and 01/24/05 have been fully considered but they are not persuasive.

It is argued, at page 6 of the remarks, that "In Joannopoulos et al., the converting layer and the mirror are not defined by their structure, but their function (see claims 1,14,27) 28 in which the radiation source generates radiation which couples to radiation modes rather than to guided modes". However, "the radiation source generates radiation which couples to radiation modes rather than to guided modes." means that the radiation source still has radiation which couples to guided modes and lines 32-34, column 3 and lines7-9, column 4 of Joannopoulos et al. do show the radiation sources will either couple to the guided modes or to radiation modes. Moreover, although the applicant uses terms different to those of Joannopoulos et al. to label the claimed invention, this does not result in any structural difference between the claimed invention and the prior art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use different terminology to describe the plurality of elements that constitute an integrated circuit as this is just a writing style and the way in which a structural limitation is expressed does not affect the configuration of the described elements.

It is argued, at page 7 of the remarks, that "the examiner has not taken into account the structural differences between Joannopoulos et al. and claimed invention, and in particular, that the light extraction means which are formed in all the surface of the radiation source 606 and of the upper and lower dielectric layers 604, 608 in Joannopoulos et al., whereas the light extraction means are formed in the periphery of these layers, i.e. around these layer, according to the claimed invention, this difference being essential for extracting light in the guided mode from these layers". However, fig. 6 of Joannopoulos et al. do show the holes 610 (510) serve as light extraction wherein the holes 610 (510) arranged in the periphery of the quantum well layer 606 and the layers (604,608). Since claim 22 does not recite light extraction means only arranged on

the periphery of the said generating and conversion layers, applicant's claim 22 does not distinguish over Joannopoulos et al. reference.

Response to Amendment

7. The reply filed on 01/10/05 and 01/24/05 is not fully responsive to the prior Office Action such as Arrangement of the Specification.

Conclusion

8. **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tan Tran whose telephone number is (571) 272-1923. The examiner can normally be reached on M-F 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

TT

Mar 2005